



*A Real HOME*

Digitized by:



ASSOCIATION  
FOR  
PRESERVATION  
TECHNOLOGY,  
INTERNATIONAL  
[www.apti.org](http://www.apti.org)

BUILDING  
TECHNOLOGY  
HERITAGE  
LIBRARY

<https://archive.org/details/buildingtechnologyheritagelibrary>

From the collection of:

Jablonski Building Conservation  
[www.jbconservation.com](http://www.jbconservation.com)

# A REAL HOME



SUGGESTIONS  
TO HOME BUILDERS

PUBLISHED BY  
COPPER AND BRASS RESEARCH ASSOCIATION  
25 BROADWAY, NEW YORK



---

A NOTE CONCERNING  
ILLUSTRATIONS

*THROUGHOUT this pamphlet will be found numerous drawings in which different parts of a house are detailed and named. These are published in the belief that the Home-builder will find the information of interest and that it will be found useful to employ correct building terms when discussing plans with architects and contractors.*

---



A COPPER SHINGLE ROOF



## Building a Real Home Not Just a House

TO the average person ownership of a home is perhaps the dream of a lifetime—in many cases it is the great objective of all effort.

The dream may be of a modest city dwelling or it may vision a suburban cottage—New England, Southern or Dutch Colonial type, English half-timber, California bungalow or a pretentious mansion, according to one's prospects in life.

Ownership may come through purchase of a house already standing, or it may be as the result of long planning and the personally supervised construction of a new house. In every case the aim is for something more than merely a house. A real home is desired—one that will transform all the coziness of the "dream picture" into enduring substance.

△     △     △

It is one thing to dream of a home and its comforts and delights, and quite another matter to assure them. Unless the prospective home owner gives careful consideration to essential details of construction the finished dwelling can be a sad disappointment instead of a perpetual source of pride and satisfaction.

Four walls, a roof and interior equipment do not by any means constitute a real home. The character of the materials entering into structural work is of vital importance in making your home all that a home should be.

The old saying "Appearances are deceitful" applies nowhere more forcefully than in home building. Something more than good looks is necessary in the proper construction or alteration of a house.

To be certain that you are securing a home in keeping with your dream of cozy comfort and lasting service you should take counsel with those who know how to build. You should also use materials that are not only attractive but are durable and *best suited* to the uses they are intended to serve.

△     △     △

Many new houses soon become a source of trouble and expense to their owners because of false economy practised in their construction. A little paint, some showy decoration, and to outward appearances your house can be a thing of beauty on the day you move in. The test will come when the newness wears off. Short-lived materials, selected for vital installations because of saving in first cost, will begin to fail. This means replacement *at an expense much greater than the so-called saving effected by use of substitute materials at the beginning*. And there is, in addition, the inconvenience and trouble occasioned by tearing up floors, opening the walls, repainting and papering incidental to the replacement of unserviceable or worn-out installations.

Therefore, the first point to be remembered is that substantial, enduring materials increase the cost of your home but little more at the start. Eventually they are the cheapest as well as the most satisfactory materials.

△     △     △

Whether you build a new house, remodel an old house, or buy a ready-built house, it will pay you to give close attention to the character of its construction. See to it that the materials used are of the kind to give you all of the service that is implied in the term "home."

## Settle These Questions Before You Build

**S**TRIVING to make your "dream home" come true is wonderfully fascinating. There is the saving and the planning, the family discussions, the study of drawings published in magazines and newspapers, inspection of ready-built houses, consultation with architects and builders, and so on.

Sooner or later the urge of immediate ownership takes hold. You simply must have that home and you start to build it brand-new or to remodel a suitable standing dwelling into the real home of your dreams.

Therein you take a wise step. For it is by all odds cheaper to own your own home than it is to pay rent, cheaper, that is, if you build or renovate or buy wisely and so keep down the expense of upkeep that becomes increasingly troublesome if you fail to take a few very simple precautions.

First—if you are building a new home—comes the selection of a site. It is here that you will need to be cautious. Remember that once chosen and work begun, the site is no longer subject to your change of mind. Form of construction may be altered, but the location of your home is now out of your control.

△ △ △

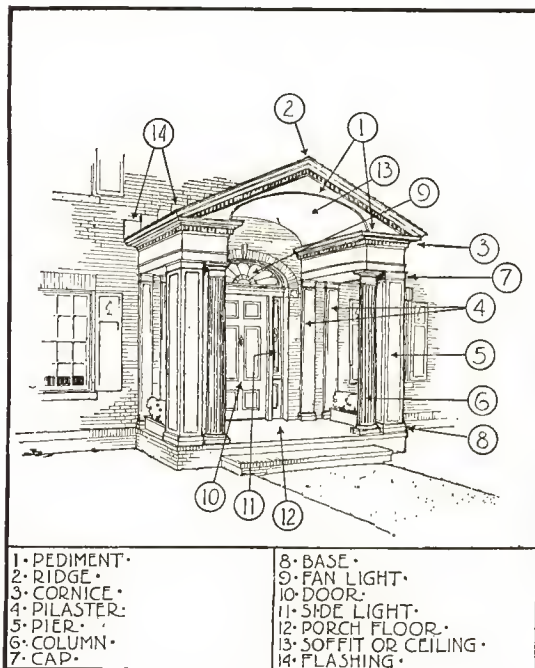
Therefore, the following fundamental points should be satisfactorily determined before you sign any agreement to purchase:

- 1 Is the property high and dry and healthful and in a neighborhood likely to increase in value and desirability?
- 2 What kind of water supply?
- 3 Are schools, churches and stores convenient?
- 4 Are you to have use of a public sewer or must you install a sewage disposal plant?
- 5 How far from transportation facilities, and what are transportation rates to place of employment?
- 6 What are the local tax and water rates?
- 7 Are electricity and gas readily available?
- 8 Does the plot need much grading?
- 9 Does the price include street grading, paving and curbing or must you be assessed later for these?
- 10 Is the title to the property clear?

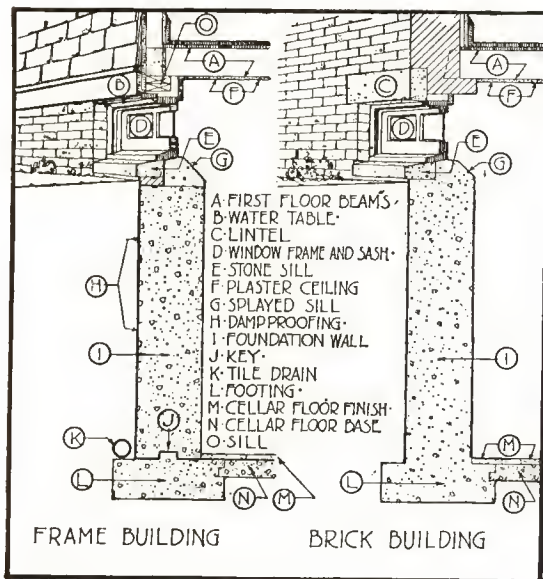
△ △ △

If, instead of building a new house, you decide to purchase and renovate a standing house, or buy a ready-built house, many of the above points are also pertinent and should be disposed of to your satisfaction before you bind yourself by agreement.

THE PORCH







THE FOUNDATION WALLS

By determining these questions now, you are in a better position accurately to gauge your collateral expense and know in advance how to apportion your available funds and at the same time safeguard the health and happiness of your family.

And likewise, when you build your home it is safest to enlist the services of a good architect. You yourself may know something about building, or you may know a carpenter and builder who does; but you will save yourself expensive mistakes, costly in money and convenience, if a man whose business it is to know all there is to know about home building is called in for counsel and direction.

You want the best possible plan to fit your needs. Any other plan means waste and dissatisfaction. You cannot afford to "take chances." And an experienced architect's knowledge will most likely save for you more than his service costs. He is the one—you are not—who will make the building and its various parts fit. The prospective builder using a reputable architect's plans is not likely to find that, for example, the stairs will not go where the picture shows them, or that the radiator pipes for the second floor pass in front of the windows on the first floor.

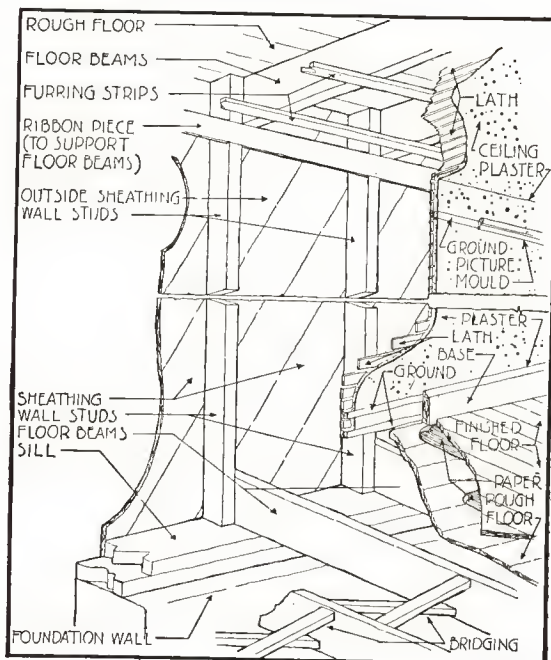
The plans and specifications published by the better newspapers and magazines are in most cases worthy of your confidence. So are the plans of certain so-called "small house architectural service bureaus."

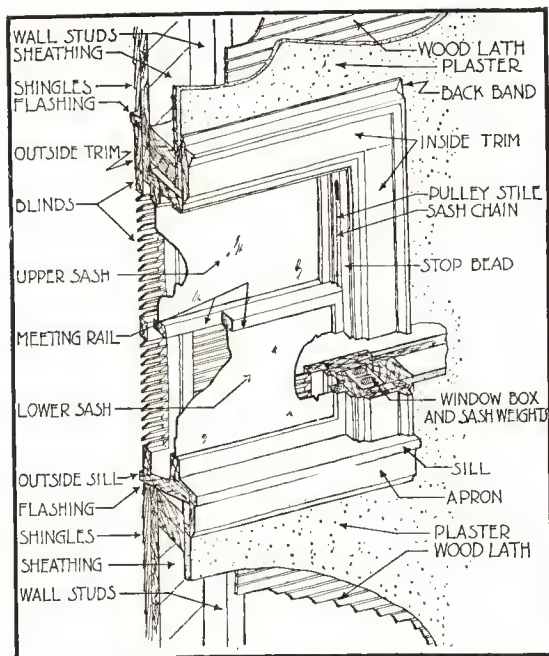
These ready-made plans are a tremendous help to the home-builder, for he can make up his mind pretty accurately in advance as to what he wants, and a great deal of ground is cleared when he comes to the stage of adapting the plans of his selection to his own needs; for, like anything ready-made, such plans will probably require alterations to fit his requirements.

But bear in mind that one of the most valuable of the architect's services is precisely what one might imagine to be the easiest—the superintendence of the erection of the home. The point is, you want to *know* you are getting what you pay for.

Incidentally, the advice of a sensible, practical woman who knows what it means to keep a house is indispensable in getting just

FRAMING DETAILS (INTERIOR)





DOUBLE HUNG WINDOW (INTERIOR VIEW)

the right slant on numerous details of construction that can make or mar any home-building plans.

△ △ △

## Contracts and "Extras"

After you have completed your plans, it is best to start at the beginning and recheck everything, to be sure that nothing has been overlooked. If possible, go over some well-built houses and mentally compare them with your own plans. If after you start to build you decide that the location of a linen closet should be changed or some vacuum cleaner connections should be added, the result is an extra expense that a little forethought could readily have obviated. You can get your plans just right, down to the smallest details—if you give the matter the thorough study it deserves—*before signing the contract.*

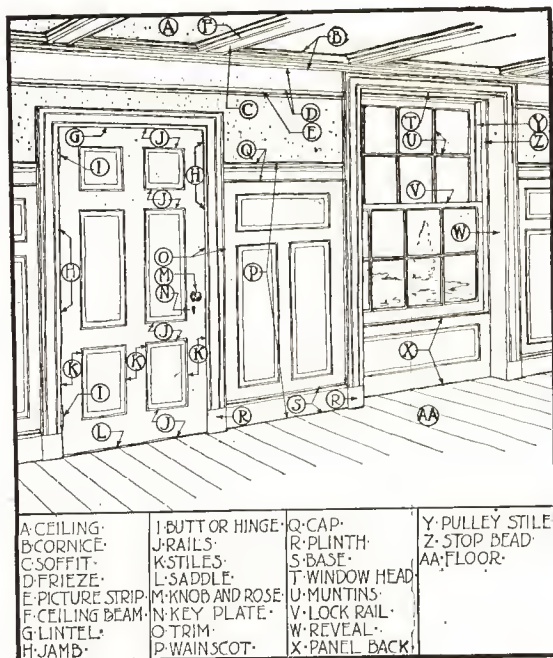
A most important detail is a properly drawn agreement between the owner and the contractor as to cost of the work. This agreement, together with the specifications and the plans, constitute the contract. The specifications determine the quality of the materials. The plans determine the quantity, and the agreement determines the price. The three constitute the contract.

When building make sure that release of mechanic's liens is provided for, in order that you may not unexpectedly find yourself liable for bills for materials or work that should have been paid for by those who handled the various details of construction.

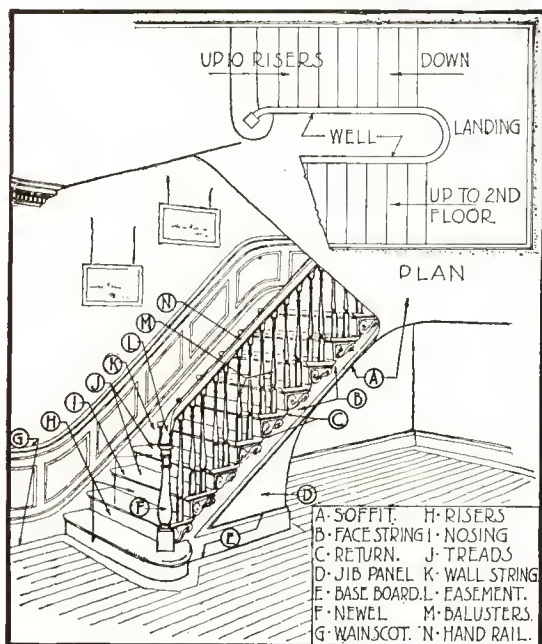
It is best not to send your plans for estimate to any builder to whom you would not be willing to entrust the job, more especially if you have no architect to supervise the building. Besides, it costs money for a builder to make up an intelligent estimate, and you want to treat him as fairly as you expect him to treat you.

You cannot watch every stick of lumber, every pound of pipe, that goes into the build-

## PANELLED INTERIOR







THE STAIRS

ing, and, therefore, you want the most reliable man you can get. It is easy to find one such by taking a little pains.

A frequent source of misunderstanding between owner and contractor develops from casual directions, frequently given by the owner to plumbers, electricians, or carpenters, during course of construction, to move a faucet here or a light socket there. The result is most likely an "extra" that costs money. You will have avoided that if your plans are carefully made, but if changes are necessary, be sure to follow the provisions of your contract as regards extras, in order to obviate misunderstandings.

The wise course is to select your architect and builder with care and then within reasonable limits trust them to perform according to contract. Insist on getting everything the contract calls for, by all means; but remember that the contract works both ways. Confidence and good temper mean a great deal in this very vital process of home-building.

## Financing the Work

You have a certain sum of money laid by as the basis for your home-building venture. One-fifth of the value of your house is said by real estate experts to be the minimum amount of equity for a comfortable start. The problem of raising the additional amount by mortgage is not great under such conditions.

Banks, trust companies, building and loan associations and reliable real estate firms stand ready as a business proposition to advise you concerning the further details of financing.

In general, the greater the equity you have in your home, the better is the security for the money borrowed, and consequently the more advantageous the terms upon which you can place your loans.

It is advisable, if you plan to take a second mortgage, to be sure of the terms you have to pay before proceeding too far, for as a second mortgage is a greater risk than a first, the interest rate is almost always higher. It follows, naturally, that because the better secured first mortgage carries a lower interest rate, the part of wisdom lies in getting as large a first mortgage as possible. One can save a large commission on a second mortgage by placing it with a relative or friend who is willing to lend the money on more reasonable terms. In most localities there are home-financing corporations, backed by public-spirited citizens, which assist in financing homes above the first mortgage.

△   △   △

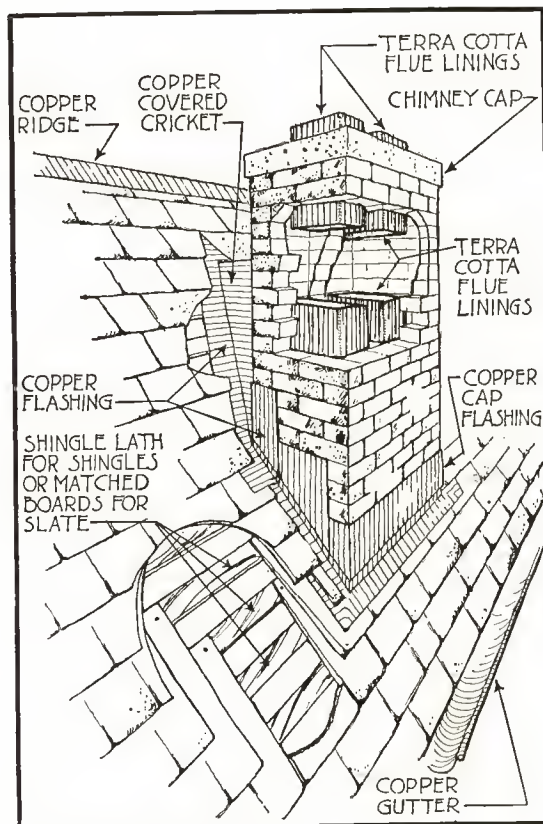
The *present* cost of your house will be proportionate to its size, its materials, the cost of labor, and its excellence of detail.

The *ultimate* cost depends upon the wise choice of the materials you cause to be used in what may be termed *the vitals of your home*: in the roof, sheet metal work, plumbing, heating plant, hardware and fixtures.

You can rely on your architect and contractor to provide the technical knowledge which insures the successful arrangement and the structural safety of your home; but you have only yourself to blame if in a short time mounting costs of repairs and renewals add unduly to your plan of financing by piling unnecessary expenses for repairs and upkeep on top of your mortgage interest, taxes and insurance.

You want as nearly as possible an *expense-proof* home. There is only one way to get it: you must *use expense-proof materials*. They cost very little more, and the ultimate saving is so great that you cannot afford to run the risks involved in using shoddy materials in these vital components.

A house loses the tranquillity, the satisfaction, the joy that makes it a *home* when you are constantly forced to grapple with the problems of making expensive repairs which might have been eliminated by the exercise of a little forethought.



THE CHIMNEY AND ROOF

## The Importance of a Good Roof

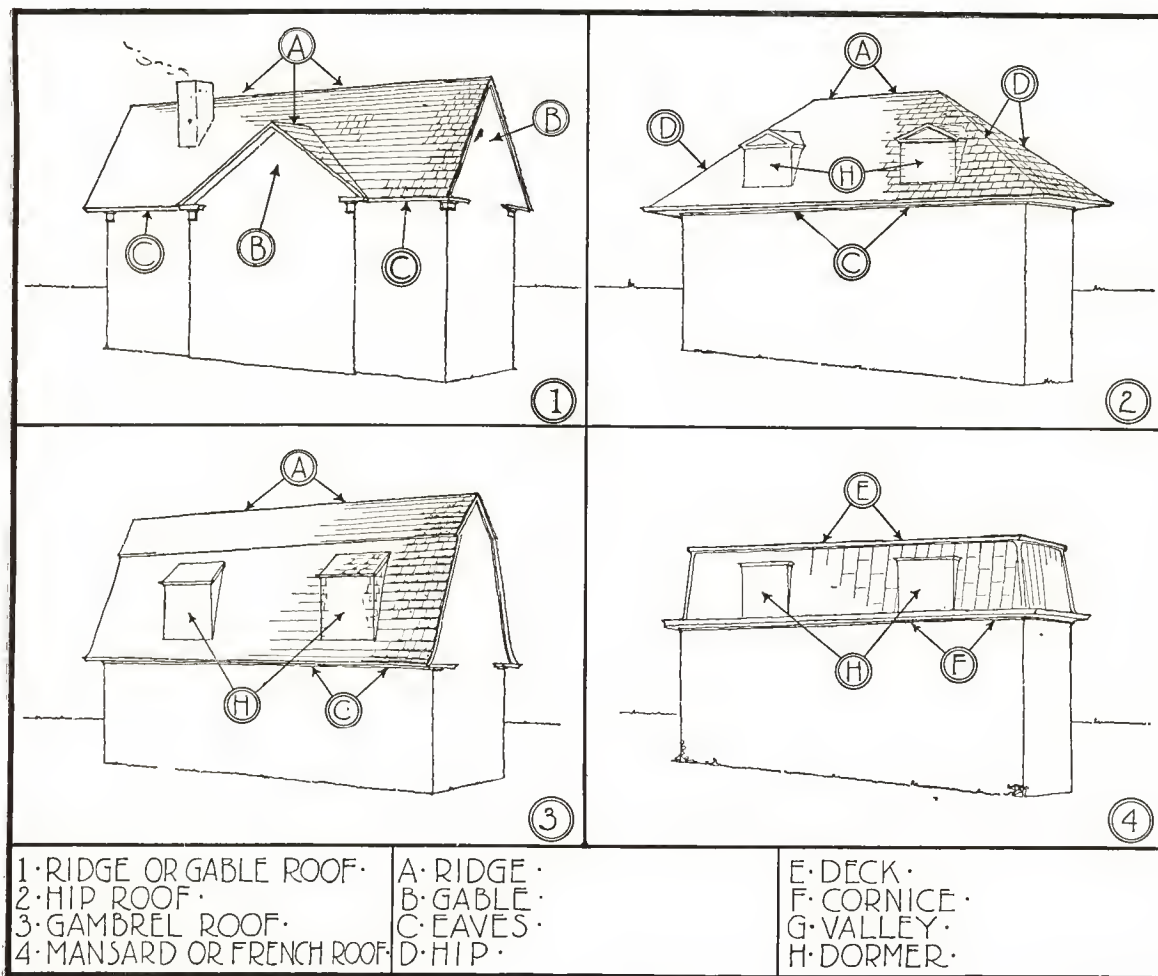
A ROOF is more than a mere covering for your house. It is one of the outstanding features of construction. Durability is, of course, the first essential, but the roof should also have style and beauty of material. These are easily assured through the use of Copper for roofing purposes.

Incidentally, it is well to remember that there are accessories to any roof which are subject in some respects to greater corrosive influences and service strain at vital points than is the main expanse of the roof. These are the flashings, gutters and downspouts. They should by all means be of Copper.

As to the design of roof best suited to your home:

The slanting roof is in most general use for dwelling purposes. The gambrel, gable and hip roof are the prevailing types. It would seem easy to make an appropriate selection as to style from only three types, but there are many different ways of misapplying a roof.

The gable roof lends itself to use in climates where snow is plentiful. It is the roof most used and perhaps the easiest to construct. It is necessary to be careful that the gable roof does not project too far over the face of the gable wall. If it hugs the wall the effect is



TYPES OF ROOFS

usually pleasing. The roof should have plenty of slope; it is rarely safe to risk a roof at a pitch of less than twenty degrees if it is to withstand rain and snow.

The foregoing applies to the gambrel roof as well, although a word of caution is necessary with regard to the slope of the gambrel. It is easy to lose all the charm of this type of roof by bad lines. The roof has a more graceful appearance if it is slightly curved at the eaves.

The third type is the hip roof, so called because the rafters run up diagonally to meet the ridge, into which the other rafters are framed. With this roof guard against the mistake of too great overhang of the eaves, in which event the house looks like a man with a hat several sizes

too large. It is good practice to bring the eaves down as near as possible to the heads of the windows, as this gives the impression of lowness and added charm.

△ △ △

You should avoid an unwise combination of the gable and gambrel. Either the gable and hip or gambrel and hip combine with pleasing effect. And remember that the smaller the house, the simpler the roof. Try to design the house so that it will not be perfectly square in plan. A pyramid effect on a small house is always unpleasing.

Avoid dormers which are so big that they destroy the design of the roof.



"Of late years," says Austin C. Lescarbours, former managing editor of the *Scientific American*, in writing on home building, "there has been an increasing tendency to use Copper for roofing purposes, especially in the better types of dwellings. It is purer than most other metals as they are ordinarily manufactured for industrial purposes, and is less active chemically than any but the noble metals (gold and silver). This immunity to chemical attack insures a high resistance to corrosion by air, water, acids and other agencies. In comparison with other metals its endurance may be counted by decades rather than years. For strength coupled with ductility, it is unexcelled.

"There is no maintenance cost for the roof of Copper because it requires no paint and it is impervious to the elements. Its first cost is its only cost. A distinct factor of economy in the roof of Copper lies in its light weight, which permits light instead of heavy roof framing."

△   △   △

Recently Copper shingles have been developed and have become deservedly popular for modest home or elaborate mansion. Copper shingles are made in different shapes and styles and are available in pre-weathered blends of copper red, verde green and copper blue; or used in its natural color the metal soon takes on the beautiful and distinctive green patina characteristic of Copper.

Copper shingles are light in weight, fire and water proof, durable, and pleasing in appearance. They add dignity to a house and give it an individuality not found in other roofings.

△   △   △

There is also Copper Spanish tile. It is similar in shape to clay tile, but is much lighter and is admirably suitable where the design calls for a tile roof.

Copper has the added advantage over most roofing materials in that it is 100 per cent fire-proof. And being properly grounded (connected with the earth by the downspout) it furnishes a most dependable protection against lightning.

△   △   △

The economy of a copper roof is readily apparent in the following charting of expense:

*For the ordinary roof—*

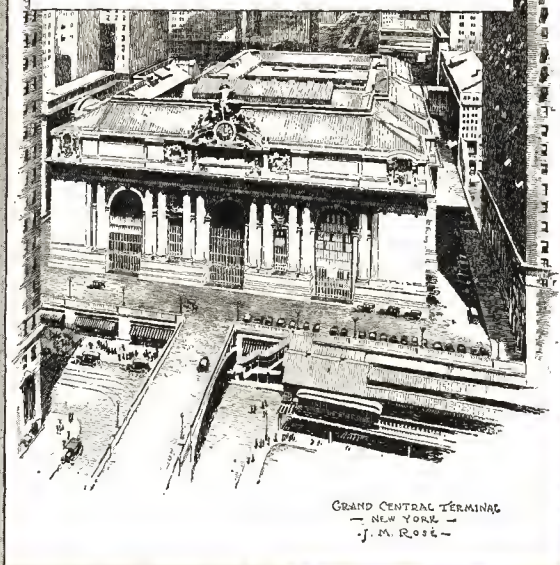
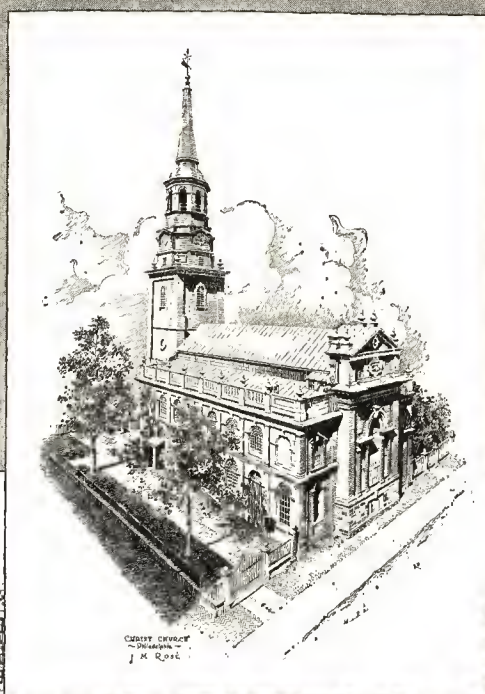
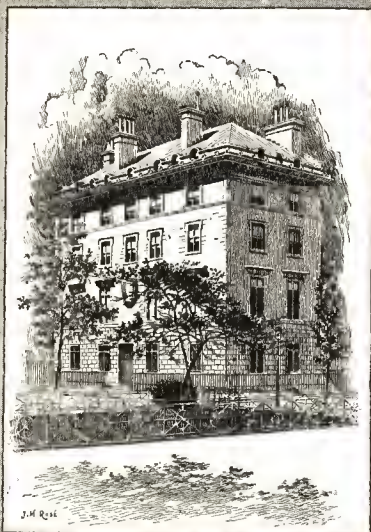
- 1 Your first cost;
- 2 To which add from thirty to fifty per cent for painting and repairs in from seven to ten years. (You cannot calculate in advance the cost of repairs to interior decoration caused by leakage, generally a sizable factor.)
- 3 Then add at least one hundred per cent of the first cost for a new roof at the end of ten years at the outside, when you give up in despair trying to patch the old one;
- 4 Multiply the total of the first two items for each succeeding ten year period

*For the Copper roof—*

Only one item of expense, the first cost;  
*no painting, no repairs, no renewals.*

△   △   △

There are, of course, other good roofing materials, but time has proved Copper the best. While others may give satisfactory service for a while, you are sure that Copper will give that kind of service as long as your home stands.



## ROOFS OF COPPER

Time has no effect on the Copper roof, except to make it more beautiful

These sketches show a town house with a standing seam roof and a country home with Copper shingles. In the upper right-hand drawing is shown Old Christ Church, Philadelphia, whose Copper roof, now 175 years old, is in perfect condition. Grand Central Terminal, New York, roofed with Copper, is shown below the quaint old church





A COPPER ROOF—THE END OF ROOFING TROUBLES. THIS PARTICULAR COPPER ROOF REPLACED A LEAKY WOOD SHINGLE ROOF. IT IS CHEAPER TO USE COPPER IN THE FIRST PLACE

## Flashings, Downspouts and Gutters

**M**ENTION has been previously made of the fact that flashings, downspouts and gutters are vital installations in roofing and that they are called upon to withstand harder service than other parts of the roof.

Failure of such installations to stand up under service conditions practically means failure of the whole roof or roof-drainage system, because rusted-out flashings, gutters, or downspouts defeat the protective purpose for which the roof and its auxiliaries are intended.

There is no more frequent cause of roof-failure than a rusty flashing. By "flashing"

is meant the sheet metal used on roofs at points where there are angles or valleys or where the roofing material comes in contact with the chimney, dormer windows, or other vertical projections through the roof.

Many are the times when, quite unnoticed, a poor flashing material rusts and the resulting leakage causes costly damage to the interior of the house.

The well-known non-corrosive properties of Copper prevent rust at such points and save expense and trouble common to rusted-out flashings.

Gutters and downspouts also must face harder wear and tear than the roof in general.

Obviously, all rain water from the roof surface concentrating in the gutters and rushing in flood volume to the spouts, thence with ever-increasing force to the underground drains, puts the most vigorous service test on these installations. Again, the constant drip-drip of moisture from the eaves into the gutters during foggy weather or in times of very light rain imposes another hard test. Everyone is familiar with the old saying about the effect of constant dropping of water on stone. When you consider that your gutters are up against that strain it will be readily apparent why metals which cannot withstand rust are short-lived in gutters or spouts. Non-rusting copper gutters and spouts defy corrosion, retain their full strength permanently, and last indefinitely.

△ △ △

Copper gutters and downspouts are the marks of the well-built house. They are an

advertisement of the fact that the wise home-builder spent a little more money in the beginning to save a lot more money in the end.

It is estimated that an average of 250 feet of downspouts and gutters are used on the typical American home. Made of Copper, they represent a small item of increase in the total cost of building and Copper lasts as long as the building stands.

△ △ △

On the other hand, the ordinary metal gutters and downspouts serve you well if they last three years. The cost of erection is the same in both cases, and the difference in initial cost is absorbed before the first replacement of the rusty, wasteful gutters is completed.

Saving and long lasting service are present wherever Copper is used. They explain why Copper is cheaper—you pay for it only once.

A COSTLY HEAP OF  
COPPER SUBSTITUTES.  
THINK WHAT THIS  
MEANS IN ANNUAL  
REPAIR BILLS







COPPER LEADER HEAD—  
GOOD AS EVER—AFTER 140 YEARS

GALVANIZED LEADER HEAD  
GONE AFTER THREE YEARS

## Rust Loss Greater than Fire Loss

The startling fact that rust costs the home-owners of the United States \$575,000,000 a year, or five times as much as their loss through fire, is causing more and more people to seek protection against this enormous drain.

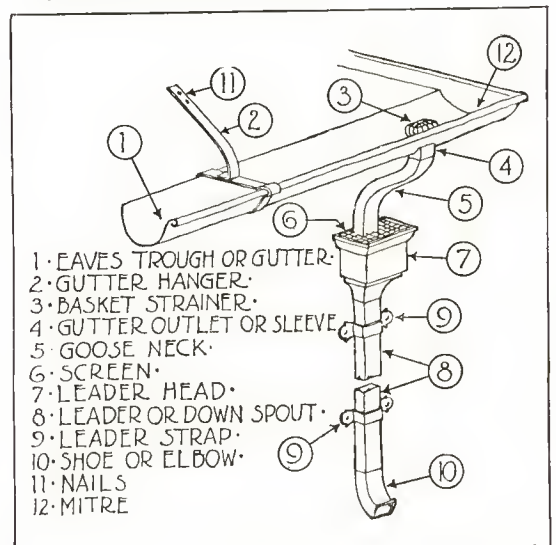
Repairs to short-lived roofs and their eventual replacement, repairing and replacing rusted-out flashings, downspouts and gutters have their part in levying the above tremendous rust tax

△ △ △

The home-builder or home-owner who overlooks the ravages which rust will wreak upon corrodible metals eventually finds himself under a mortgage he didn't anticipate. Everybody is familiar with first, second and third mortgages. The wise home-owner is on guard against the *fourth mortgage* that rust will create. He uses Bronze, Brass and Copper wherever these

metals are best suited to the purpose and is exempt from payments on the *fourth mortgage*—the encumbrance sponsored by rust.

GUTTER AND LEADER DETAIL







COPPER PIPE FROM ANCIENT EGYPT—ACTUALLY 5700 YEARS OLD

## Trouble-Proof Plumbing Is Essential

**T**HERE is no single installation in your home that contributes more to the comfort and health of your family than the plumbing.

It is the source of your water supply and the servant of household sanitation. A house without adequate and efficient plumbing never can be a real home. The service obtained through your plumbing installation must be at your disposal 24 hours a day. That being the case, it is important that the plumbing be given the most careful consideration.

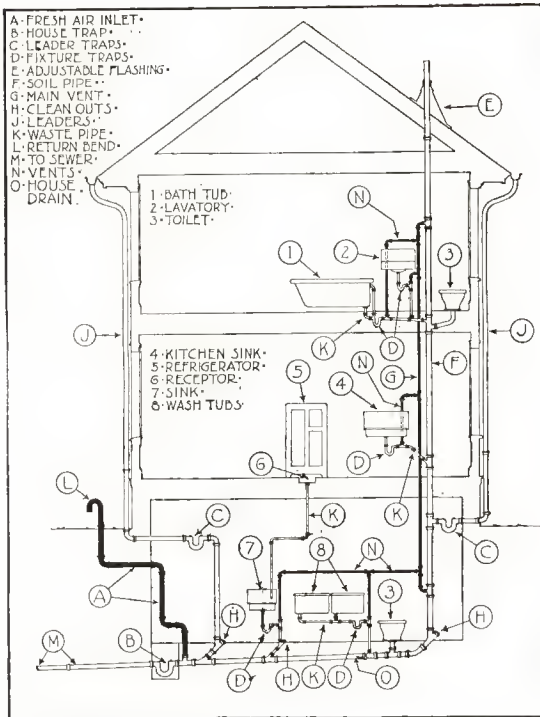
### The Sanitary Unit

The plumbing system of your home comprises what may be described as two units. One unit is for sanitation and drainage. The other furnishes your water supply. The the-

ory of the sanitary plumbing unit is to prevent the escape of sewer gases into the house. Regulations covering plumbing installation are pretty general throughout the country, and the successful accomplishment of this once difficult task is almost universal.

The accompanying sketch (next page) will give you a clear idea of a simple plumbing installation. In a general way, the house drain connects with the sewer system, whether that be municipal or private. The connection with the sewer system is graded to have a sufficient slope to the sewer connection.

A clean-out should be placed where the drain enters the house, and at other points where the pipe takes a right angle turn. The house drain should be large enough to carry off the maximum amount of sewage that it will be likely to receive at any time, and yet if it is too large, it will not be self-cleaning. If possible,



THE SANITARY UNIT

it should be placed along the wall above the floor level.

A fresh air inlet not less than four inches in diameter should connect with the house drain, with the mouth of this air inlet sufficiently removed from any opening into the house. A soil stack joins the house drain and is run up through the house to receive the discharge from the various fixtures in the system.

Where the house is particularly large, there are several such soil stacks; but careful planning will enable the average house to be adequately provided for with one stack.

Between each fixture and its opening into the soil stack is placed some form of trap to prevent the outlet of foul air and gas from the stack. A good trap must be large enough to hold a sufficient amount of water to withstand loss by evaporation for a long time without breaking the seal.

A small vent pipe connects each trap with the open air, so that the water seal in the trap may not be broken by the siphoning

action of the flow of water through the main soil line. Good practice and economical construction require a form of lay-out that will allow the vents from all the traps to be connected into a main vent stack.

From the point above its connection with the highest fixture, the soil stack is converted into a vent stack, and the pipe connecting all the vents usually converges into the vent stack at this point. This stack should emerge from the roof in a vertical direction about twelve inches, and in a position located well away from any window or other opening into the house.

It is wise to increase the size of the pipe by one inch from a point one foot below the roof, as in cold climates the outlet is in danger of becoming choked with hoar frost during winter months. The opening about the stack where it passes through the roof should be permanently weather-proofed with Copper flashing.

Provision should be made for connecting the drip pipe of the refrigerator with a small sink or similar fixture in the cellar. Sanitary regulations in many communities require that ice-box wastes avoid any sort of trapped connection with a soil line. Experience has shown that if the sewer backs up for any reason or the water seal of the refrigerator is dry, sewer gases escape into the ice box.

## The Water Supply Unit

Despite the fact that water supply plumbing of the better type costs but little more than inferior plumbing—and saves so much trouble and expense—you may be easily misled into accepting a makeshift plumbing system.

This is true if, as is most likely, you know little about plumbing. It is perhaps a confusing and uninteresting problem. You are not on guard against the grave danger of considering the subject disposed of with the selection of fixtures that are pleasing to the eye.

Yet, no detail of the house can give you so much vexation and needless expense as the part that is hidden—the piping.

The diagram below shows, in a simple manner, the water supply piping in a small house. The cold water lines are shown in outline and the hot water lines appear in full black. The several types of heaters are also shown.

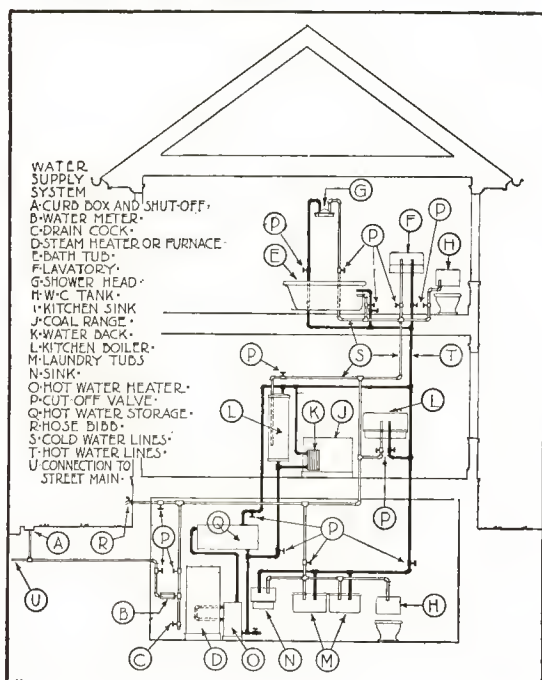
The water enters the house through a service line laid in the street and provided with a valve (A) for shutting it off outside the house. This service line passes through the foundation wall and ends at the meter (B). From the meter the supply is conducted to the various fixtures by means of mains, risers and branches. Piping on the cellar ceiling is known as "mains"; the vertical lines are called "risers"; and the take offs to each fixture are called "branches."

△ △ △

There are one or two principles which every supply system should incorporate. These are:

1. A drain cock (C). This is placed at the low point of the system and every main slopes

THE WATER SUPPLY UNIT



TAKEN FROM EASTERN CITY HALL. IRON PIPE SHOWING THE EFFECTS OF RUST. RUST IS SO SPONGY THAT WHEN ONLY 1/40 OF THE IRON WALL OF A ONE-INCH PIPE HAS BECOME OXIDIZED, THE PIPE IS COMPLETELY CLOGGED WITH RUST

toward it. When the house is to stand empty for any length of time the system should be shut off by the valve (P) outside the meter and the system emptied by the drain cock (C).

2. All mains, risers and branches should be provided with shut-off valves (P). This is especially important for the branches, for if it is necessary to replace a washer in a leaky faucet, it is most inconvenient to shut off the whole system.

Corrosion and rust are the ever-present enemies in any home in which a Brass pipe water supply system is not installed. Water absorbs air, gases and other chemical ingredients. On entering the pipe these attack the corrodible piping and rust clogging results. The quality of water passing through rusted pipes is affected.

Water pressures today are higher than they were formerly and the increased water supply afforded through increased pressure all the more rapidly deteriorates piping that is subject to corrosion. Hot water is more extensively used in present-day homes than was the case in former times. Hot water is particularly destructive to corrodible iron and steel pipe.

△ △ △

It being impossible for ordinary pipe to escape rusting, you must consider the certainty of its replacement sooner or later, particularly in hot water lines, in case you should unwisely adopt such material. Even before replacement



is necessary, such pipes often clog. The flow of water is obstructed and reduced. Particles of rust are detached and carried through faucets, not only making the water unpleasant for drinking purposes, but also staining fixtures and injuring fabrics in the laundry.

You have had the exasperating experience of waiting on a slow-running tap to supply water for your bath. In that case you were witnessing what rust can do to corrodible pipe. And any time you have drawn a glass of red-brown water from a faucet you have had another unpleasant demonstration of rust's effect on ordinary piping.

Plumbing pipes are concealed behind walls and under floors. To repair and then to replace rusted pipes, the walls and floors must be torn away. The expense involved and the inconvenience encountered are added reasons why the installation of a plumbing system of Brass is essential when the house is built.

Sometimes a rusted service pipe from the street main to the house must be replaced in order to obtain an adequate supply of water. Copper or Brass are the best materials that may be used for water services. Water companies the country over are turning more and more to the use of these materials.

Brass pipe is immune from rust and retains its strength. It maintains the clean, sparkling flow of water as crystal clear as your local water supply authorities worked to make it. And it will always be the full flow that the pipes were intended to deliver.

A point to be remembered is that pipe and pipe fittings are the smallest item of expense



BRASS PIPE AFTER 30 YEARS OF SERVICE

in any plumbing installation. In fact, less than ten cents out of every dollar you spend in building your home goes for the entire plumbing system and its installation, of which amount a very small part is for the pipe.

The cost of installing a non-rusting water-supply plumbing system is increased very little by employing Brass pipe instead of ordinary pipe. The labor cost in both cases is about the same and the additional cost of Brass pipe over the best corrodible pipe is only about \$65 in a house costing \$12,000 to build. For houses costing less the difference in cost of Brass compared to other pipe is proportionately lower.



STEEL PIPE THAT FAILED IN A PHILADELPHIA HOTEL

## Here Is a Factor Too Important To Overlook

The smooth interior surface of Brass pipe permits water to flow more freely than through rough pipes of other materials. Hence, a greater volume of water will pass through a Brass pipe than through one of iron. This disparity in favor of Brass becomes greater as the iron pipe fills with rust.

For this reason, a smaller size Brass pipe will perform equal or greater service than iron pipe of a larger size.

A prominent sanitary engineer gives the following relative savings in pipe sizes which are possible by the use of Brass.

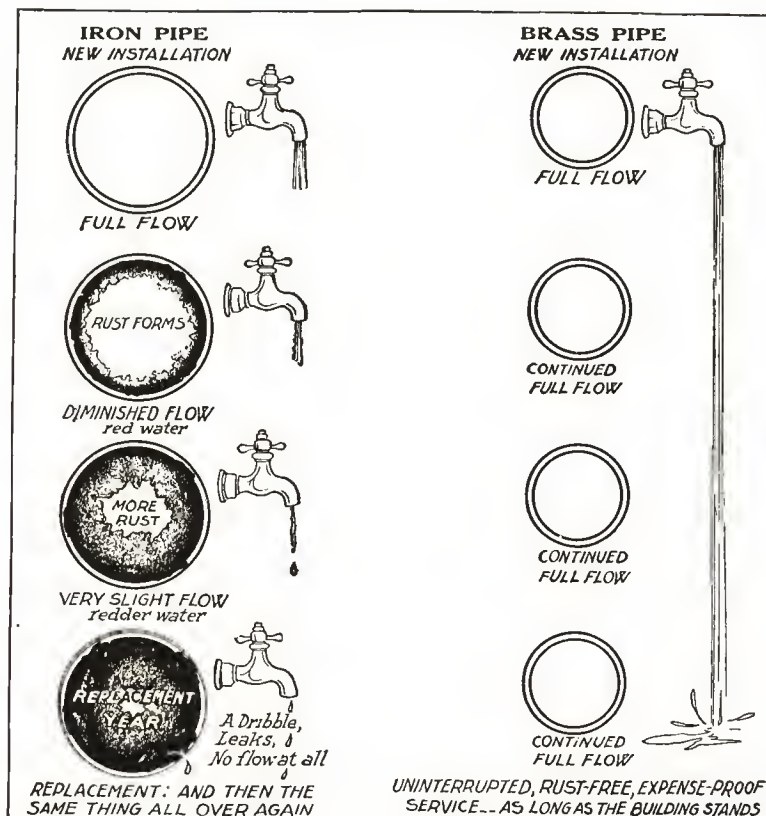
### In Hot Water Lines

$\frac{1}{2}$  in. Brass pipe will do the work of 1 in. iron  
 $\frac{3}{4}$  in. Brass pipe will do the work of  $1\frac{1}{4}$  in. iron  
 1 in. Brass pipe will do the work of  $1\frac{1}{2}$  in. iron  
 $1\frac{1}{2}$  in. Brass pipe will do the work of  $2\frac{1}{2}$  in. iron  
 2 in. Brass pipe will do the work of 3 in. iron

### In Cold Water Lines

$\frac{1}{2}$  in. Brass pipe will do the work of  $\frac{3}{4}$  in. iron  
 $\frac{3}{4}$  in. Brass pipe will do the work of 1 in. iron  
 1 in. Brass pipe will do the work of  $1\frac{1}{4}$  in. iron  
 $1\frac{1}{2}$  in. Brass pipe will do the work of 2 in. iron  
 2 in. Brass pipe will do the work of  $2\frac{1}{2}$  in. iron

This little diagram shows why these savings with Brass are possible







WHEN IRON PIPE BETWEEN TILED BATH ROOM FLOOR AND KITCHEN CEILING "SPRUNG A LEAK"

Keep in mind that the assured full flow permits of using Brass pipe of smaller diameter than iron or steel pipe and that this economy applies to both hot and cold lines when Brass pipe is installed.

## Tests

Every plumbing system should be given two tests—one when the "roughing in" has been completed, and another after the fixtures and fittings are in place.

For the roughing tests, the openings should be closed up temporarily and a water pressure of at least ten pounds applied to the whole system, which should then be given a most careful examination for leaks, especially those likely to occur in out-of-the-way places.

If split hubs or defective pipe are found—and they may be despite the utmost care on the part of the manufacturer—they should be removed and replaced by perfect ones. The final test may be in the form of pungent smoke pumped into the system. Any large leaks will make themselves known by sight

of the escaping smoke and small ones may be detected by the odor of the smoke. Soap suds may be applied to any suspected places, and if there is a leak, bubbles will show themselves.

## Sinks and Tubs

In planning the laundry or kitchen equipment, see that provision is made in the plumbing for hot and cold water connection and drainage for a possible washing machine or a dishwasher.

Be sure laundry trays are placed at a convenient height and where they will receive adequate light. This same caution also applies to kitchen sinks. The sink should be as near the pantry as possible and sufficiently distant from the kitchen range so that people working at the sink will not be uncomfortable from the heat of the fire.

The height of the kitchen sink should be at least thirty-six inches for the comfort of the majority of people. One of the chief causes of complaint from housewives is that the sink

is set too low. Be sure the faucets extend out far enough to permit utensils to be filled easily.

In these days of gas ranges, it is advisable to provide a water-back for the furnace so that a supply of hot water can be had whenever the heating system is in service.

## The Hot Water Heater

**P**RACTICALLY every home built nowadays includes a hot water heater. Where gas or electricity is not available, there is either an oil-burning water heater installed, or provision is made for heating water with coal.

Where gas is the heating medium heaters may be one of the following types:

- 1 The tank heater which is connected to the range boiler. This heater is lighted by hand when hot water is needed.
- 2 The instantaneous heater which furnishes hot water at the faucet almost immediately. It lights itself automatically.
- 3 The automatic storage heater which provides for a supply of hot water in storage and available at all times.

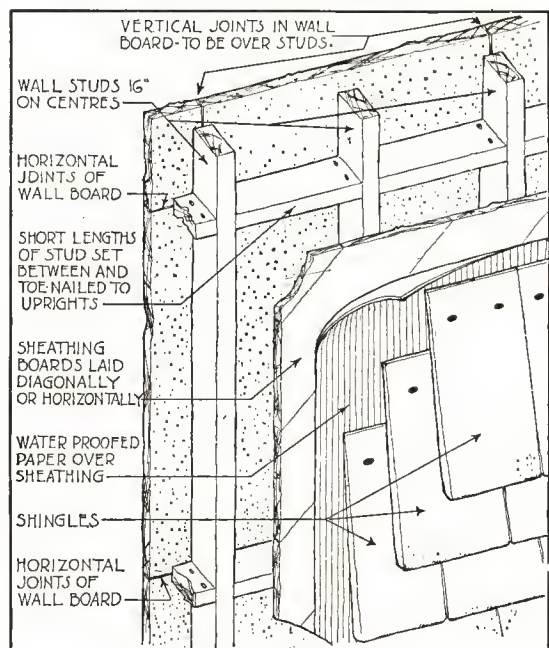
When considering a heater there are several structural features that should have your attention. If you will keep them in mind you will be money ahead in the end.

All these heaters have one thing in common. The heating coils are of Copper. This fact, in itself, indicates that Copper is the ideal material for use for hot water heating purposes as the coil is subjected to the most severe usage.

These details will mean much in comfort and convenience. But, above all these, your plumbing must be permanent, and permanence requires Brass pipe quite as much as it needs the knowledge of a real plumber in its installation.

When installing the tank heater (see cut, page 19) be sure that it is connected to the range boiler or storage tank with Brass pipe and Brass fittings. If this is not done and iron or steel pipe is used the piping will soon become rust clogged, sufficient water cannot circulate through the Copper coil, with the result that steam may be formed and the life of the heater very much reduced. Again, if the internal

WOOD SHINGLES (EXTERIOR DETAIL)





# TYPICAL AM



SOUTHERN NEW ENGLAND COLONIAL



ENGLISH FARM HOUSE



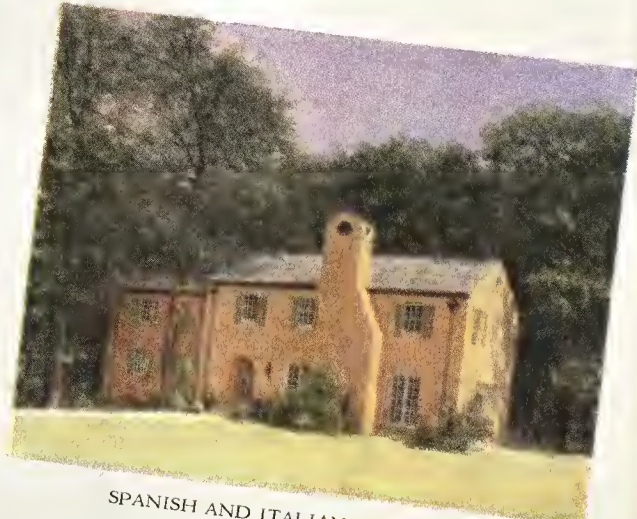
ENGLISH IN DESIGN



AMERICAN SMALL HOUSE TYPE



GOOD ENGLISH TYPE



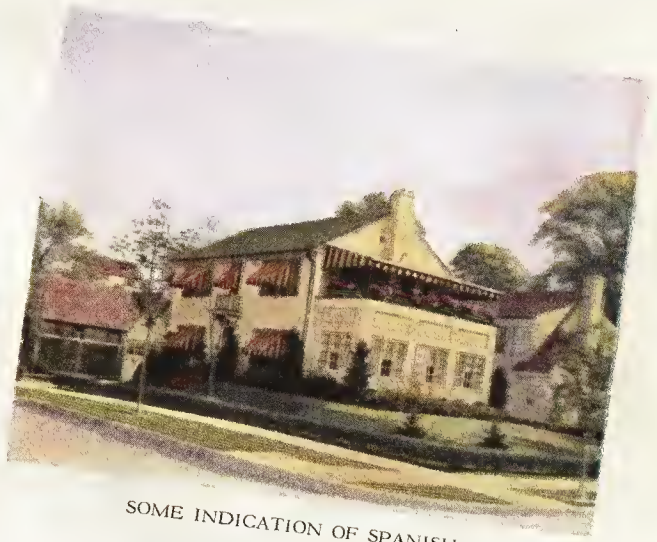
SPANISH AND ITALIAN INFLUENCE



# AMERICAN HOMES



SOUTHERN COLONIAL ADAPTATION



SOME INDICATION OF SPANISH



FREE TREATMENT OF ENGLISH



NORMAN FARM HOUSE



ADAPTATION OF COLONIAL



FREE TREATMENT OF NORMAN

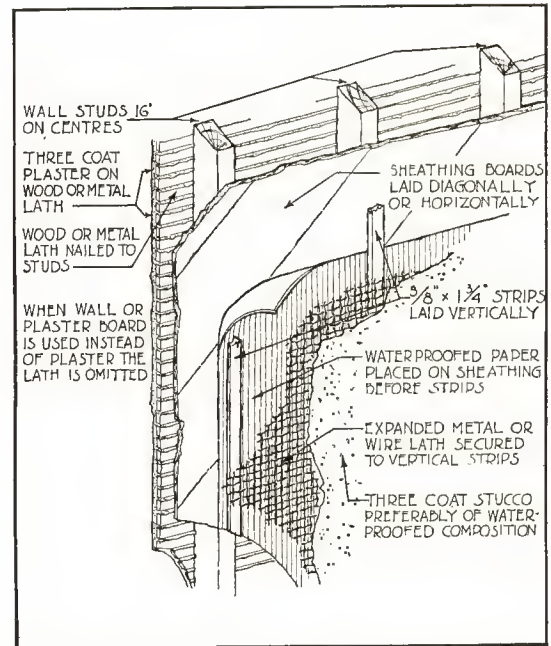
diameter of the pipe is reduced through formation of rust your gas bills will be abnormally high considering the quantity of hot water used. The reason for this is that while the Copper coil is always able to produce at its capacity the clogged iron or steel piping will not allow the hot water to flow through it in full volume.

Use Brass pipe for connecting up—it does not rust—it will allow full discharge of hot water heated by the Copper coil, your gas bills will be lower as explained above; and last, but not least, the connecting pipe will not require renewal in short order. Besides, you will always obtain satisfactory service from your heater.

△ △ △

The instantaneous hot-water heater requires no range boiler or storage tank but is connected direct to the hot water piping. As soon as the faucet is turned on the gas jets are ignited by a small pilot light and hot water is almost instantly produced by the Copper coils. If you examine the good heaters of this type you will find that they are constructed with Copper and Brass pipe and fittings throughout. Their builders know from experience that this is the best and most satisfactory form of construction.

The automatic storage heater has been coming into great favor within the last few years and justly so. If you examine the heating part of such heaters produced by reliable manufacturers you will again find that Copper coils



STUCCO ON METAL LATH (EXTERIOR DETAIL)

and Brass pipe and fittings are used. This type of heater is, however, built with a storage tank which is covered with an insulating material. You cannot see the metal of the tank because of its covering, and it is, therefore, necessary to inquire whether it is of Copper. Insist on a Copper tank. The price should be about the same, or only a few dollars more than the cost of a good heater using a galvanized tank. While you are about it you may as well have the everlasting Copper storage tank instead of a tank that rusts, which sooner or later will have to be replaced.





## The Hot Water Storage Tank

THE source of your hot water supply after the water has been heated by the tank heater or by the furnace auxiliary heater is the storage tank or range boiler. It is optional with you whether a storage tank is installed with an automatic or instantaneous heater, but you surely will require a storage tank with any other type of heater. To insure that the hot water will be absolutely free from rust at this source of supply it is essential that the boiler be of Copper. Copper never rusts.

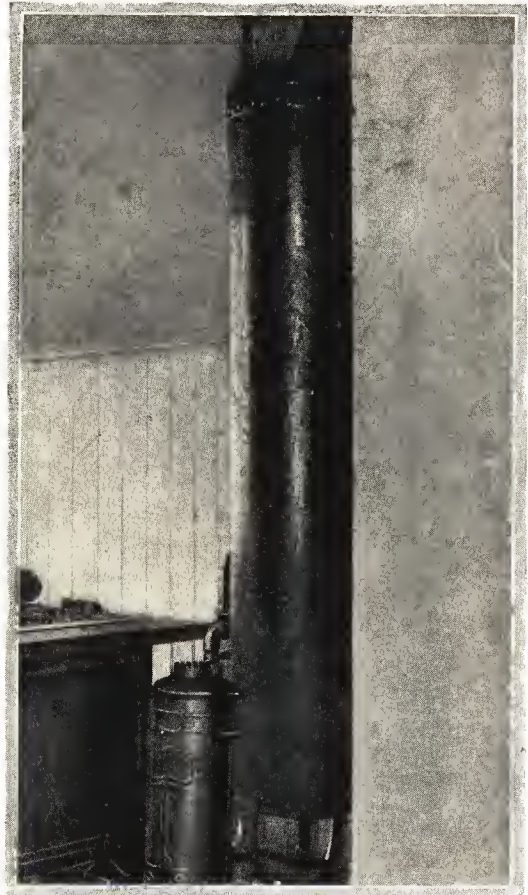
In recent years, especially during the war period when Copper was in great demand for munitions and other military purposes, many galvanized iron or steel boilers were installed. This type of boiler is affected by the same corrosive influences that shorten the life of iron or steel pipe.

In fact, nowhere else in your water system will corrosion and rusting take place so quickly as in the ordinary storage tank. The galvanizing is soon corroded by the especially deteriorating effect of hot water. Rust and sludge formed are carried through the piping to all hot water taps. A Copper range boiler or storage tank installed at the outset eliminates this rust nuisance for all time.

△ △ △

All that has been said about the durability, efficiency and economy of Brass pipe applies also to the Copper boiler. Any other metal boiler or storage tank must be replaced in a few years. But a Copper boiler properly installed lasts as long as your house stands.

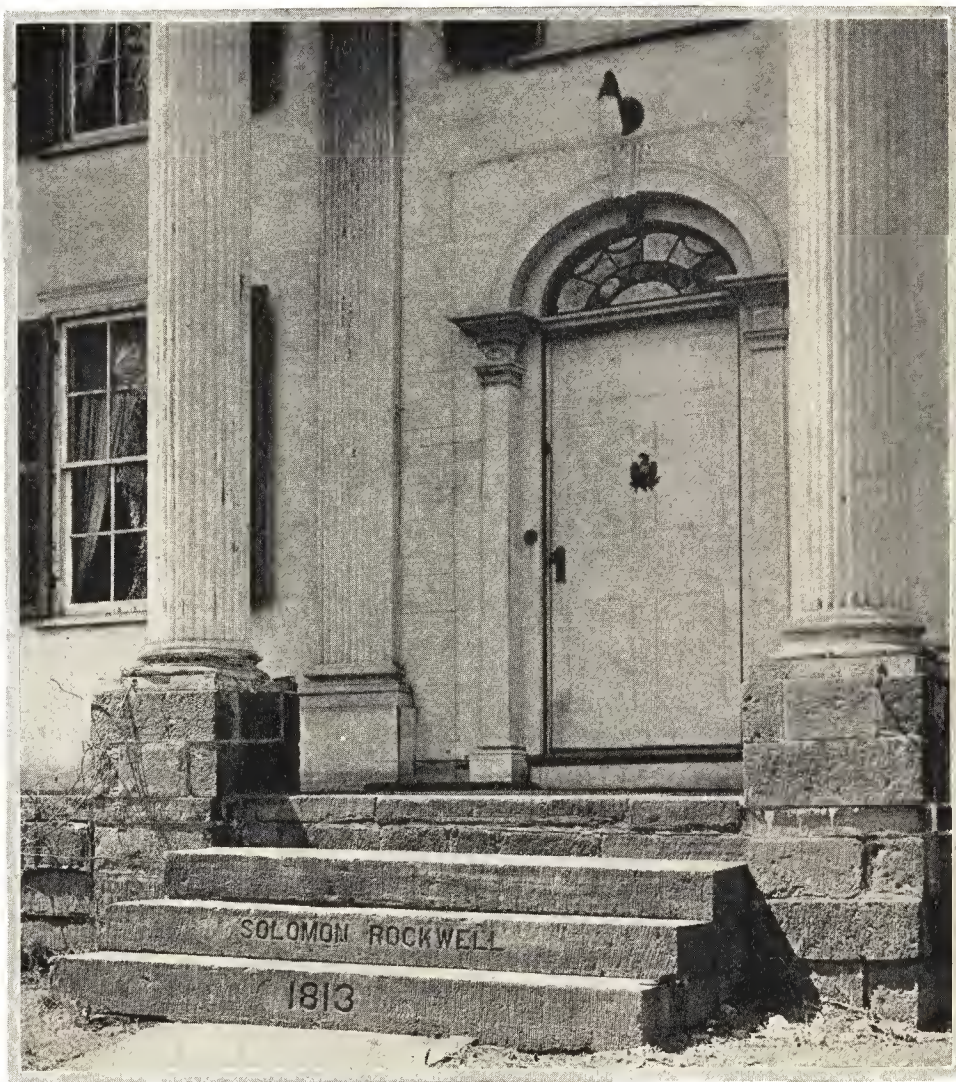
The accompanying illustrations demonstrate the superiority of the Copper boiler over the corrodible metal boiler. One shows a Copper



COPPER BOILER IN USE 56 YEARS, AND STILL GOOD

boiler giving its usual satisfactory service after fifty-six years of use. It is an actual picture of the boiler in use. The other is rather a melancholy picture — the “graveyard” of boilers made of corrodible metal which had to be discarded after a short life of service. These “graveyards” are to be seen at almost any junkman’s headquarters adjacent to cities.

Copper range boilers or Copper storage tanks are readily obtainable in all sizes. The initial



BRASS HARDWARE AFTER LONG SERVICE

## Getting More Than Wear From Hardware

**Y**OU need more than wear from hardware—you want good looks, too. Like rugs and wall paper, hardware adds finish to your home.

Any hardware may give service and look well when new. But do not be hoodwinked

by sparkling newness. The man who has had building experience knows that he must picture the condition of his hardware after five years of service to get the right perspective. What about the wear then? Will the attractiveness be there, too? When you buy is the time to settle those questions.



Hardware is manufactured from various metals, but there are compelling reasons why you should choose real Brass and Bronze hardware for your home. No other detail of construction is given such hard, constant use, and certainly no other installations are more noticeable, particularly if corroded, than the hardware.

Door knobs and handles, hinges, door plates, drawer pulls and wall plates are outstanding details and are continually exposed to constant wear and corrosion.

If these and other items of your hardware are merely plated metals, it will not be long before unsightliness is apparent in every room of your house. For example, door knobs or wall plates used where lighting push buttons are installed are subject to the constant touch of moist hands. Metal that cannot defy corrosion speedily succumbs to the rusting effect of this moisture, and plating is but a short-lived protection. Then there is the moisture in the atmosphere. It, too, has its corrosive effect in the early disfiguring of substitute materials for Brass and Bronze.

Plated and other imitations of Copper, Brass and Bronze hardware, when used on the outside of a house or garage, rust and streak the paint with ugly stains. All of this unsightliness is avoided by using real Brass or Bronze.

Bronze or Brass hinges, for instance, will not rust and, as they have self-lubricating qualities, they never squeak. Incidentally, the heavier doors should have three butts, rather than two, to prevent sagging or warping.

△ △ △

Opportunity for the exercise of good taste is found in the selection of the knob and escutcheon, or handle. Simplicity of design and harmony with the other details of the room are essential. Brass or Bronze hardware fits right into any decorative scheme. Picture for yourself an escutcheon, knob and hinges of dull Bronze on a rich mahogany door. What attractiveness there is in gleaming Brass wall plates, door knobs and handles, register faces, sash lifts and chains all blending with the warm tones of a buff-colored room and furnishings! In houses of Colonial design, the Brass knocker



HARDWARE THAT LOOKS WELL A YEAR OR TWO





TYPES OF GOOD HARDWARE



THE cuts on this page illustrate a few of the many neat and attractive designs of hardware made in Brass and Bronze.

When hardware of this quality is installed you will not find it corroded after comparatively short service. Brass or Bronze hardware does not rust.

As for the cost, a glance at page 42 will demonstrate how slight is the extra outlay to insure that the hardware installed in your home will not only wear well but will retain its attractiveness.

adds a touch of distinction and it will not mar with continued use.

To be certain that you get Brass, *real* Brass, apply this simple test: Take an ordinary magnet and touch it to the door knobs or other hardware. If it "pulls" when you draw it away, the metal is not Brass. The thin plating will not prevent the magnetic pull of the base metal any more than it will prevent rust from reaching through and taking hold of the metal underneath. If the hardware is real Brass or Bronze, the magnet will not "pull." It comes away as freely as though you had applied it to wood.

Good hardware is never "too expensive." In the total cost of fitting a house the difference

in cost between the best hardware and the imitation (steel Brass-plated) is slight. In the long run there is great economy in buying the best.

For example, Bronze or Brass sash chains in windows eliminate the chance of troublesome breakage due to the rusting or parting of corrodible metal chains or cords.

It is wise to order your hardware early if you want to be sure to avoid the mistake of substituting cheap material. It is a well-known fact that all too often there is a tendency to make up for an added expense item elsewhere by ordering a poor quality of hardware. And it doesn't pay to do so.

## Good Lighting Fixtures

THE decorative effect of lighting fixtures in the home is so obvious that little need be said concerning their attractiveness. Ever since the passing of the once popular glass chandelier or glass-trimmed bracket, lighting fixtures have been largely all-metal, or the principal decorative effect has been obtained through the metal used in their construction.

Due to the widespread use of electricity, a great variety of lighting fixtures is now employed in homes. Chandeliers, domes, wall brackets, pendant lights, bridge lamps, boudoir lamps and a multitude of other portable lights are found essential in every type of house. All of these fixtures are ornamentally designed and their beauty is chiefly in their handsome metal work.

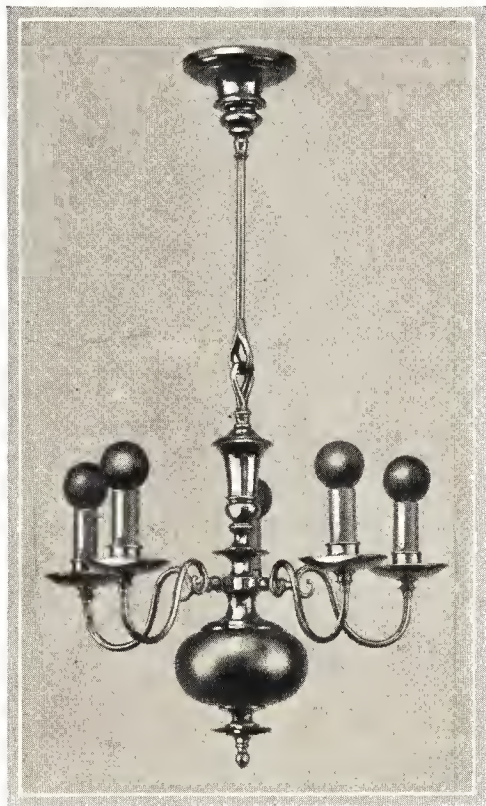
△ △ △

All fixtures are attractive when new. The test comes in service in your home. Corrosive influences, such as moisture, though invisible,

A GOOD WALL LIGHT







Where substitutes are used corrosion spoils the appearance of the fixture, also of the supporting woodwork or wall, and in time the fixture will rust loose from its fastenings. That is true in varying degree of substitute materials all over the house. Copper, Brass and Bronze give the service you pay for and are cheaper because you pay for them only once.

△ △ △

Progressive manufacturers produce a wide range of artistic fixtures in real Copper, Brass

FIXTURES  
THAT WILL  
LAST

are always present. Their destructive effect is soon seen on plated fixtures and also on those made of soft composition metal.

Blotched and spotted fixtures mar the appearance of any room. But the chance of this unsightliness is eliminated when you buy fixtures made of Brass, Copper or Bronze. They take and hold a finish better than soft composition or other metal.

Another point worthy of careful consideration is that Copper, Brass and Bronze are strong structurally, while fixtures of soft composition are not.

No matter how little you plan to spend, you may install real Brass in stamped or spun shapes and a great variety of styles and finishes for the allotted sum and, at the same time, assure permanently attractive fixtures. Your expenditure then always will be satisfactory in that you will have fixtures that give long-lasting decorative value as well as lighting service.







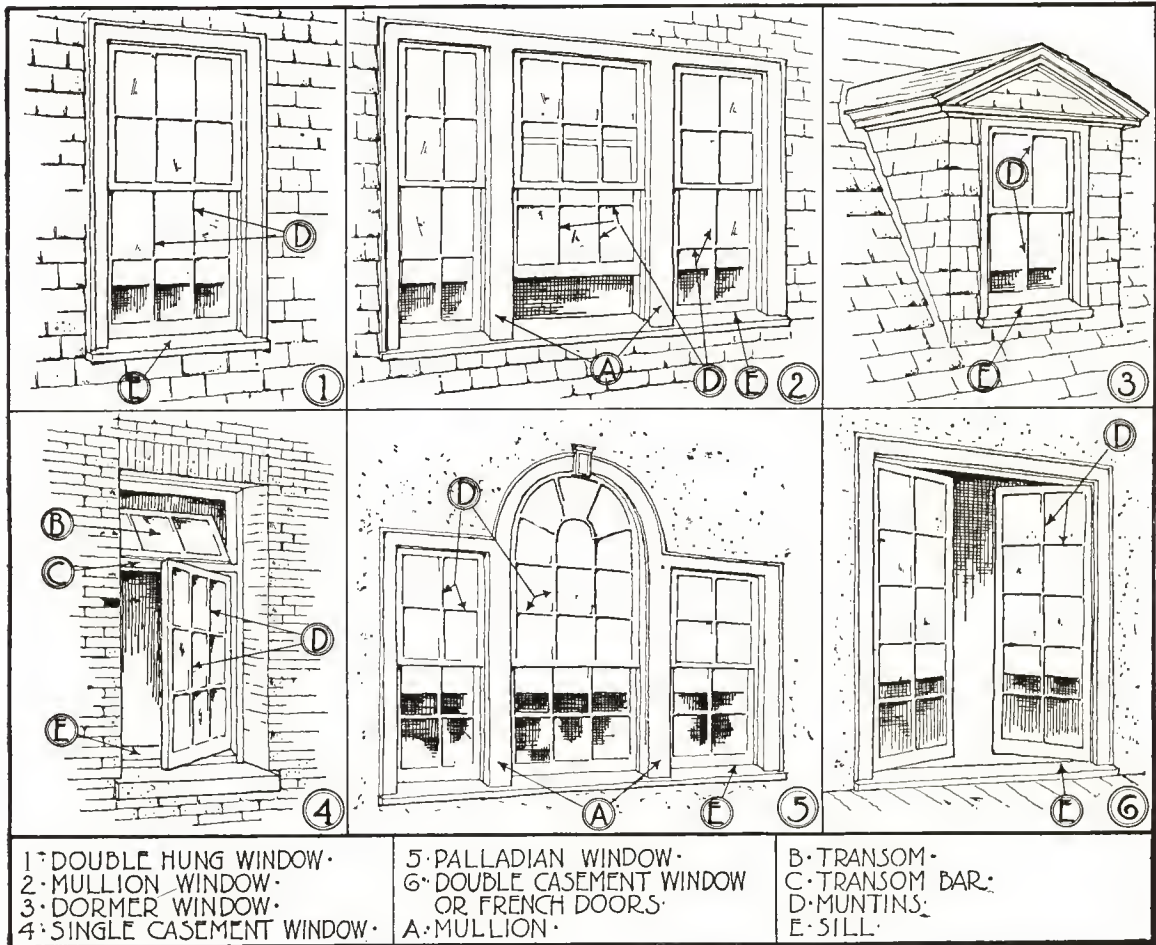
PORTABLE LIGHT WALL LIGHT AND EXTERIOR  
LIGHT OF GOOD DESIGN AND LASTING  
MATERIAL

and Bronze. Therefore it is possible to secure practically any suitable design at a cost to fit the sum you have allotted for lighting fixtures. Economy and satisfactory service both suggest that the right choice of materials should be made. Choose Copper, Brass or Bronze fixtures and you will be practicing true economy and at the same time assuring full satisfaction.

△ △ △

Copper is a favorite metal for exterior lighting fixtures such as porch lanterns, entrance lights, and exterior garage lights because of its well-known ability to successfully withstand the destructive action of snow, sleet, and rain. When exposed to these elements, Copper takes on a protective green coating which is an added charm.





WINDOWS

## Keeping Insect Pests Outside

**I**T is a mistake to dismiss lightly the subject of screens for your home. Insect pests make screens necessary. They must be kept out if you are to enjoy all of the anticipated comforts of your home.

In screening your home it is necessary to give attention to other openings besides the main doors and windows. Cellar and attic windows, skylight vents and ventilating shafts should also be screened in order to balk insect pests. An inconspicuous window or opening left

unguarded will give them admittance and much discomfort to your family even though the main openings are fully protected.

If your home includes a porch you will want at least a section of the porch screened. This means the erection and removal of the porch screening each year and subjects the screen cloth to additional strain of handling. Insect screen cloth that rusts will not long withstand this strain, hence it is poor economy to use that kind of cloth.



Since the only purpose of screens is complete protection against annoying and dangerous insects, the only screens worth consideration are those constructed of material that never fails to give full protection. Your screens (particularly your screen doors) are exposed to all kinds of weather as well as to hard knocks. Iron or steel wire screen cloth rusts and breaks. Every rust spot eventually becomes an "open door" to flies and mosquitoes and deprives you of protection.

Bronze or Copper screen cloth does not rust, is always a complete barrier to insects and is true economy in screening because of its long-lasting service. Screens constructed of Bronze or Copper insect cloth cost only about one-quarter more for the finished screen, including frame, than screens made of rusting materials. After a year or two of service the saving effected through use of Copper or Bronze cloth—no need for painting, no replacement of rusted-out sections—makes these enduring

screens cost no more than ordinary screens. Over a period of years—because Bronze or Copper screens last indefinitely unless damaged by accident—they are actually cheaper than ordinary screens.

Bronze or Copper screening may be put up and taken down each year with full assurance that the screen cloth has no weak spots from rust to cause it to break in handling.

No harder test than the corrosive effect of salt water can be applied to screens. Only Copper or Bronze screens are used on steamships traversing tropical waters—a striking recognition of their superiority. They are invariably specified in the equipment of Government buildings. The Panama Canal Zone is a trying region for screen cloth because of the moist atmosphere and the great prevalence of insect pests. Bronze and Copper screens have been placed on hospitals and other buildings there because they defy rust and keep disease-spreading insects out.

## Ornamental Work

**O**RNAMENTAL work has a prominent place in many houses. If you have one or more fireplaces in your home consider the striking touch given by Brass andirons, Brass fire sets, Brass fire screens, Brass coal scuttles and Brass wood boxes. You will require some or all of these appliances. The enduring qualities of Brass, together with the bright and "cozy" appearance, well repay the expenditure for Brass fireplace equipment.

Brass candlesticks impart a distinctive touch to any room—a quaint and "homey" set-off to any piece of furniture on which candlesticks are appropriate. Then there are Brass lamps, Brass fruit bowls, Brass trays, Brass smoking stands, Brass curtain hold-backs

and other knickknacks which serve as very practical and artistic room adornments.

The Brass knocker is another useful and highly decorative appliance both for outside doors and inside. Brass, Bronze or Copper lanterns create pleasing "atmosphere" at various appropriate points.

Where there is a small garden adjoining the house a sun-dial is an effective ornament, and it should be Brass or Bronze, of course, for brightness and everlasting wear. Sometimes a sun-dial can be placed on the wall of a house. A weather vane should always be of Copper.

These and many other appliances of Brass or Bronze for decorative use are readily obtainable at prices to suit the expenditure planned by those who desire them.





Quaint and Serviceable Pieces in Brass and Bronze



GOOD PIECES FOR THE FIREPLACE

## Decorative Articles Useful and Lasting

ON this page and the adjoining one are shown a number of useful articles in Brass or Bronze that add dignity and character to the rooms in which they are appropriate for service. Book ends of Bronze, modeled after a famous subject "The Thinker," are in keeping with the atmosphere of the room used as a library. The quaint little figures of women in hoop-skirts are bells of Brass, tuneful and picturesque for the dining room.

Dragons and dolphins of Brass lend decora-

tive touch to serviceable candlesticks, and there is also a dainty combination of flower basket and candlesticks all of Brass. Nut bowls, sundials, and other pieces shown are suggestive of the thousand and one attractive articles of Brass and Bronze obtainable at prices to fit the purchaser's purse.

Above are illustrated good types of pieces for use and adornment about the fireplace. There is lasting satisfaction when these are of Brass because they retain their good looks.



## Washing Machines and Other Labor Savers

THERE are so many time-saving and labor-saving appliances now approved by the women of the household that your home is sure to include some of them. Washing machines, vacuum cleaners, dish-washing machines and electric irons are but a few of these convenient devices.

The washing machine you select will be a good one or the reverse, according to the amount of consideration you give to essential details. If you choose a machine of reliable make with a Copper tank you will have settled the problem of washing machines for all time. Periodically exposed to the corrosive effect of hot water plus the chemical action of soap or washing compounds, the tank is the vital detail. An ordinary galvanized tank makes the machine a trifle cheaper to buy, but how long will it last? And when it starts to rust what will be its effect on your linen? Those who have had experience with rust-stained garments and household linen will be wary of any machine equipped with a corrodible tank. Copper does not rust in washing machines.

△     △     △

Some women prefer to boil the "wash," even when a washing machine is part of the laundry equipment. In that case you will want a reliable boiler—one that will not rust and streak the clothes. A Copper boiler has the standing-up qualities essential in this hard usage. It pays dividends in long service and freedom from corrosion.

If you are buying a dish-washing machine, see to it that it is Copper-built and you will not have a rusted-out appliance after surprisingly short service.

A Copper hood over the stove is useful in carrying off odors. A Copper sink in the

pantry with Copper drain boards is not so likely to cause slipping and breakage of dishes. Hardware and trim on your ice-box, if of Brass, will eliminate the ugly appearance due to rust, and also the short wear of ordinary plated devices.

Curtain rods of real Brass make certain that there will be no spoiling of white curtains through rust stains from corroding metal rods. Towel racks, soap dishes, tumbler holders and other bathroom fixtures, either in original Brass or nickel-plated Brass, give the same assurance for linen.

The best toasters are of Brass, either plain or nickel-plated; so are the good percolators. Brass or Bronze parts are essential for long wear in vacuum cleaners. In fact, almost all of the appliances for making housekeeping pleasant are the best appliances when Copper, Brass or Bronze is used in their construction.

## Electric Refrigerators

The iceless or electric refrigerator is one of the newer household appliances which add so much to the comfort and convenience of the modern home. The electric refrigerator is entirely automatic in its action and requires no attention whatever. Its advantages are that it produces even, dry cold at a lower temperature than the ordinary ice-box, and entirely eliminates the drip, moisture and dirt of melting ice, as well as the inconvenience of ice-box refilling and drainage.

Because of the low temperature and dry cold produced by the electric refrigerator, food products of all kinds—meats, fish, milk, butter and vegetables—keep longer and maintain their freshness much better than when stored in the familiar ice-box. Chilled desserts are easily prepared with iceless refrigeration, and the ice





A GOOD TYPE OF KITCHEN

trays provide neat cubes of ice of just the right size for serving in iced drinks or in fruit.

Your electric light company will gladly give you complete information as to types, sizes and prices of electric refrigerators, and in cooperation with the manufacturer will arrange for an installation in your home.

## Planning the Wiring

The electric wiring in your house can be planned so as to add greatly to the convenience and comfort of your housekeeping and home enjoyment. Furthermore, your electrical contractor should know definitely your present and possible future requirements for light and appliance outlets in order to plan the various house circuits, and arrange for enough of them so that none will be loaded unsafely. Wiring codes usually limit the rated loads on ordinary individual circuits, and lamps and sockets are grouped so that their total circuit power requirements will not be excessive.

In many older wired residences where outlets were seldom more than two per room, frequent use is made of two and three-way plugs to increase the number of service or appliance outlets. This may result in overloading circuits beyond their original planned capacity, which causes frequent fuse blowing. This condition can be corrected by running additional circuits from the panel board, and should always be provided for when remodeling a house.

In planning rooms in your new house, be generous with the number of outlets, and provide for your future needs as well as the immediate present. Install plenty of base-board plugs, especially in dining and living rooms; a separate plug for washing machine or electric iron is a great convenience in the laundry. Be sure to include room switches, convenient to entrance doorways of all rooms, as well as three-way switches to control lights in halls, basements and porches. Your electrical contractor can suggest many other appliance outlets which will prove great time-savers.

## When You Buy a House Already Built

**I**F you are considering the purchase of a house already built there are various points about which it will pay you to be on your guard.

When houses are group-built, for speculative purposes, quality is apt to be reduced to an irreducible minimum. But a good builder does not sacrifice quality for cost-saving that does not really save. In the case of a house built by an individual home-owner it may be for sale because of dissatisfaction with structural details that would cause you, also, to be dissatisfied after purchase.

It is wise, therefore, to be observant of the following details which will give you a pretty accurate index of the *quality* of the building as a whole:

Look well to the plumbing. There is no surer indication of lack of quality in a house than cheap plumbing. The house that has Brass piping in the plumbing system is almost certain to be a good buy.

What is the condition of the roof? See if it is apt to assume the condition of a sieve and need extensive repairs or renewal. If the house with a wood shingle roof has been carefully built, you will find the shingles have been fastened with Copper or Brass nails. If the house has a Copper roof you can be pretty certain that it is well built in other details.

Examine the eaves trough and downspouts. They should be Copper. This is another indication of care in building that gives a good idea of the quality of the structure.

And be sure to examine the hardware and lighting fixtures with extreme care. As you go in, look at the keyplate on the door or the switch plate on the wall. Either one is a small detail, but if it is rusted and disfigured

you may know it is made of poor material and you should be on your guard. For if quality has been sacrificed in so small a detail, where for a few pennies more real Brass that doesn't rust could have been obtained, it argues an attitude on the part of the builders that is apt to have allowed quality in important hardware or lighting fixtures to be treated in the same slipshod manner.

There are naturally many other points about which you will want to assure yourself. These suggestions, however, are offered as giving a few quick tests, which even the least technically informed among prospective purchasers may successfully apply.

BRASS DOOR KNOCKER AFTER LONG SERVICE





## Where Your Building Dollar Goes

This analysis is based upon actual construction costs of nine houses varying in price from \$9,100 to \$23,000 and averaging \$15,000.

Of every dollar expended:		Total in a \$15,000 House:
For Excavating and Grading . . . . .	1.8 cents is spent . . .	\$270
For Masonry . . . . .	9.4 cents is spent . . .	1,410
For Stucco, Plaster and Tile Work . . . . .	10.6 cents is spent . . .	1,590
For Carpentry . . . . .	27.2 cents is spent . . .	4,080
For Roofing . . . . .	5.4 cents is spent . . .	810
For Flashings, Downspouts and Gutters . . . . .	0.7 cents is spent . . .	105
For Plumbing . . . . .	9.3 cents is spent . . .	1,395
For Heating . . . . .	7.0 cents is spent . . .	1,050
For Electric Wiring and Fixtures . . . . .	2.7 cents is spent . . .	405
For Hardware . . . . .	2.0 cents is spent . . .	300
For Painting and Glazing . . . . .	4.5 cents is spent . . .	675
For Screens . . . . .	0.9 cents is spent . . .	135
<hr/>		<hr/>
Total for Construction . . . . .	81.5	\$12,225
For Landscaping . . . . .	3.0 cents is spent . . .	450
For Builder's Profit . . . . .	9.4 cents is spent . . .	1,410
For Architect's Fee . . . . .	4.5 cents is spent . . .	675
For Financing . . . . .	1.6 cents is spent . . .	240
<hr/>		<hr/>
100.0 cents		\$15,000

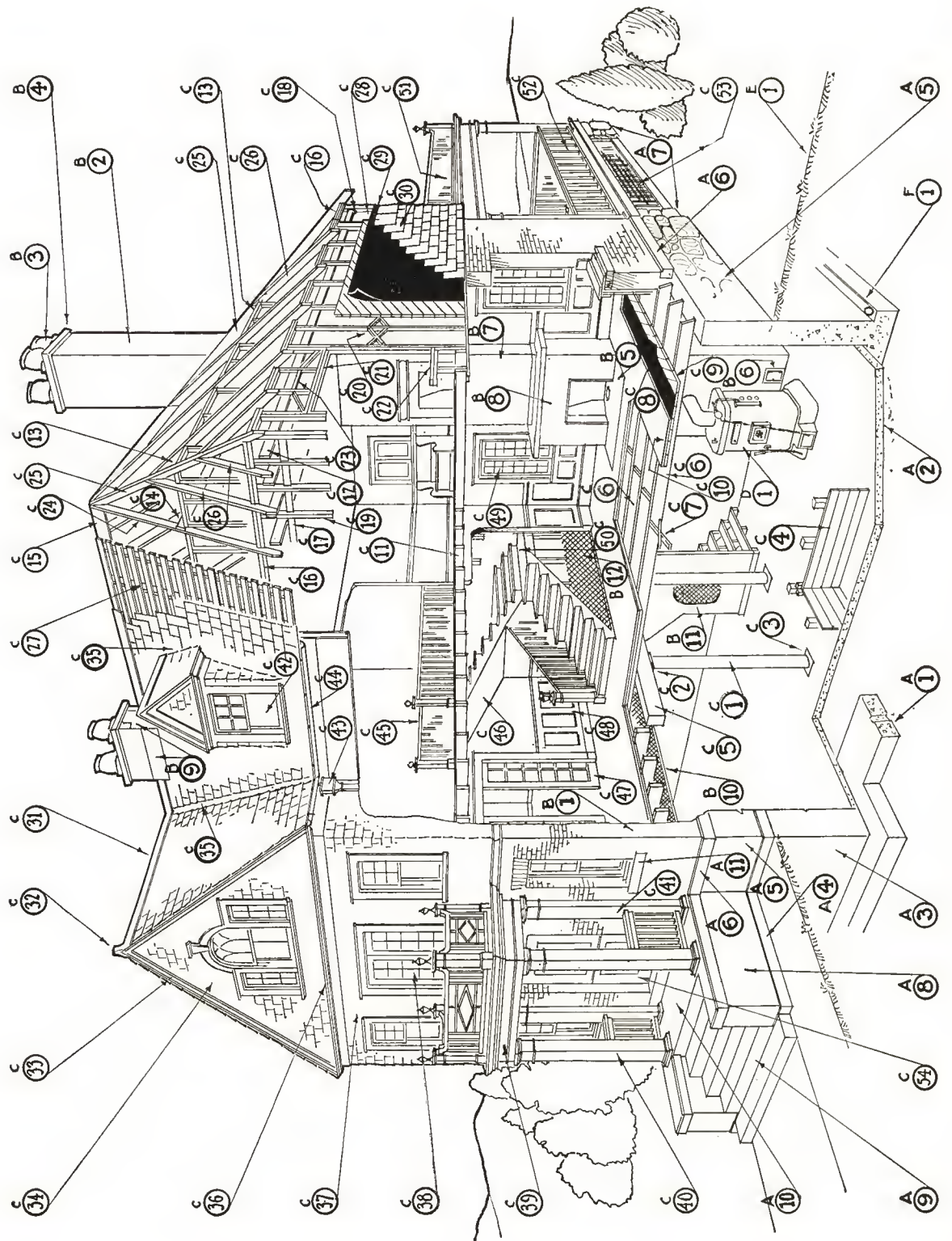
To install Copper, Brass and Bronze in vital parts of the building, where deterioration soon means heavy additional expense, will add to your building dollar:

For Copper Flashings, Downspouts and Gutters, only . . . . .	4/10 of a cent
For Brass Pipe Plumbing, only . . . . .	6/10 of a cent*
For Bronze or Brass Lighting Fixtures, only . . . . .	55/100 of a cent
For Brass or Bronze Hardware, only . . . . .	9/10 of a cent
For Bronze or Copper Insect Screens, only . . . . .	1/10 of a cent

2 55/100 cents

\*Compared to cost of best ordinary pipe.

For less than 3 per cent extra you can use Brass, Bronze and Copper and insure your house against costly repairs.





## Commonly Used Terms in Residence Construction

Stone Mason's Work	Carpenter Work	Carpenter Work (Continued)	Carpenter Work (Continued)
<b>A—</b> 1—Footings	<b>G—</b> 1—Iron Columns	<b>C—</b> 18—Corner Post	<b>C—</b> 40—Porch Column
2—Cellar Floor	2—Column Cap	19—Studding	41—Pilaster
3—Foundation Wall	3—Column Base	20—Bridging	42—Dormer Window
4—Ground Course	4—Coal Bin	21—Rough Head	43—Leader Head and
5—Underpinning	5—Girder	22—Rough Sill	Leader (or
6—Water Table	6—First Floor Beams	23—Truss over opening	Downspout)
7—Piers	7—Double Row Her- ring-Bone Cross	24—Rafters	44—Gutter
8—Buttress	Bridging	25—Hip Rafters	45—Balustrade
9—Steps	8—Flooring Paper	26—Jack Rafters	46—Stair Soffit
10—Platform	9—Under (or Rough)	27—Shingle Lath	47—Sliding Doors
11—Outside Sill	Floor	28—Diagonal Sheath- ing	48—Wainscoting
<b>Brick Work and Plastering</b>	10—Top (or Finish) Floor	29—Sheathing Paper	49—Casement Window
<b>B—</b> 1—First Story Wall	11—Second Floor Beams	30—Shingle	50—Platform
2—Chimney	12—Ceiling Beams (or Attic Floor Beams)	31—Ridge Board	51—Deck Roof (Bal- cony)
3—Chimney Pots	13—Purlin	32—Finial	52—Veranda Balus- trade
4—Chimney Cap	14—Collar Beams	33—Rake Cornice	53—Lattice
5—Hearth	15—Ridge Rafters	34—Gable End Valley	54—Dutch Door
6—Cleanout Door	16—Plate	35—Eaves Cornice	
8—Fireplace	17—Ledger Board	36—Second Story Wall	D—1—Boiler
9—Chimney Flashings		37—French Window	E—1—Grade
10—Metal Lath and Plaster Ceiling		39—Porch Cornice	F—1—Drain
11—Metal Lath and Plaster Partition			
12—Metal Lath			

## How "Saving" May Be Wasteful

ARCHITECTS and contractors, metallurgists and economists concede the great superiority of Copper, Brass and Bronze over other metals used in building. Why, then, you may ask, is it necessary that you should take a firm position in demanding that the specifications for your home provide for Copper and its alloys wherever their use is possible?

The reason is that architects and contractors must accede to the client's orders to keep down costs wherever possible.

It is found that an extra \$500 or so is required. The home-builder is not willing to sacrifice a room, or a porch or some other feature. The architect is reluctant to change the house plan. Likewise the contractor. He prefers to have his construction work go through—to use good lumber, good brick, good stone, etc. Both architect and contractor want to keep the home-builder satisfied.

But there is that extra \$500. It is natural for them to take the course of least resistance.

So they agree with the home-builder that retrenchments can be made in the appropriations for plumbing, roofing and hardware. The home-builder, uninformed concerning true economy, makes a bad start. And that is how substitutes take the place of Copper and Brass when the home-builder fails to realize the error of this course.

Let the home-builder consider the question from his own viewpoint—as a matter of business.

Here is what Arthur Brisbane, famous editor, writing in the "Today" column of the *New York American*, says:

\*\*\* You could pay the national debt of the United States in twenty years with the amount that could be saved by ending the loss caused by unnecessary rust—replacing with copper, iron used in the wrong places.

The last sacrifice you should make is one involving the quality of the plumbing, roofing, sheet-metal work, or hardware in your home. The use of Copper and Copper products is essential if you are to have an enduring, a better built home.







THESE USEFUL BOOKS ON HOME BUILDING  
ARE YOURS FOR THE ASKING—WRITE FOR THEM

## Contents

	Page
Building a Real Home, Not Just a House . . . . .	5
Settle These Questions Before You Build . . . . .	6
Contracts and "Extras" . . . . .	8
Financing the Work . . . . .	9
The Importance of a Good Roof . . . . .	10
Flashings, Downspouts and Gutters . . . . .	14
Rust Loss Greater than Fire Loss . . . . .	16
Trouble Proof Plumbing . . . . .	17
The Sanitary Unit. . . . .	17
The Water Supply Unit . . . . .	18
Comparisons of Pipe Flow . . . . .	21
Tests . . . . .	22
Sinks and Tubs . . . . .	22
The Hot Water Heater . . . . .	23
Good Architectural Types—Better Built Homes. . . . .	24, 25
The Hot Water Storage Tank. . . . .	27
Your Heating Plant . . . . .	28
Getting More Than Wear From Hardware . . . . .	30
Good Lighting Fixtures . . . . .	33
Keeping Insect Pests Outside . . . . .	36
Ornamental Work . . . . .	37
Decorative Articles Useful and Lasting. . . . .	39
Washing Machines and Other Labor Savers . . . . .	40
Electric Refrigerators . . . . .	40
Planning the Wiring . . . . .	41
When You Buy a House Already Built. . . . .	42
Where Your Building Dollar Goes . . . . .	43
Commonly Used Terms in Residence Construction . . . . .	45
How "Saving" May Be Wasteful . . . . .	46





